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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,599	09/09/2003	Hiroyuki Yoshimura	FUJI:276	1926
ROSSI & ASSOCIATES P.O. Box 826 Ashburn, VA 20146-0826			EXAMINER VU, DAVID	
			ART UNIT 2818	PAPER NUMBER

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/658,599

Applicant(s)

YOSHIMURA, HIROYUKI

Examiner

DAVID VU

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 09 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 02/04/04.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claim 18 is rejected under 35 U. S. C. 102(e) as being anticipated by Yanagi et al. (US Pat. 6,821,869, herein after Yanagi).

Yanagi discloses in figs. 11A-11E a master disc for transferring a magnetic pattern to a magnetic recording medium, comprising: a silicon substrate (col. 11, lines 38-39) having grooves corresponding to a magnetic pattern; and a magnetic material 112a filling the grooves, wherein the magnetic material is formed of an alloy of iron (Fe) and cobalt (Co) or an alloy of iron, cobalt, and nickel (Ni) (col. 5, lines 10-16).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5-7, 10, 12-15, 17 and 20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Yanagi (US Pat. 6,821,869) in view of Kumar et al. (US Pat. 6,696,365, herein after Kumar).

Yanagi discloses in figs. 11A-11E a method comprising the steps of: providing a semiconductor substrate (col. 11, lines 38-39); forming an resist film 107 on the surface of the substrate 106; forming a photomask 101 on the resist film 107; patterning the photomask 101 corresponding to the predetermined magnetic pattern, developing the photomask 101 for etching the resist film 107 (fig. 11A), and etching resist film 107 to form the pattern of resist film 111 corresponding to the predetermined magnetic pattern, and removing the patterned photomask 101 before etching the substrate 106 (fig. 11B); etching the substrate 106 using the resist patterned 111 as a mask to form grooves corresponding to the predetermined magnetic pattern (fig. 11C); embedding a soft magnetic film 112a in the grooves; wherein the soft magnetic film is formed of cobalt or an alloy of iron (Fe) and cobalt (Co) or an alloy of iron, cobalt, and nickel (Ni) (col. 5, lines 10-16); and removing the resist patterned 111 (figs. 11D-E).

Yanagi fails to disclose the resist film is formed of SiO₂. However, Kumar teaches the resist patterned 12 (figs. 1-6) is a thermally grown silicon oxide layer (col. 1, lines 10-24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Yanagi by forming the silicon oxide resist film as taught by Kumar since

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the material such as silicon oxide is recognized equivalent material for forming the resist film in a method of manufacturing a semiconductor device.

Yanagi discloses the grooves having a required depth for embedding the magnetic film but fails to disclose the depth of the grooves in the substrate is $0.25\mu\text{m}$ or $0.5\mu\text{m}$. Although the exact depth of the grooves was not specified as recited in claims 10, 11 and 20, it appears that having a specific depth of the grooves as claimed is prima facie obvious due to the fact that one can vary the depth of the grooves in order to achieve a specific magnetic film. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined process of Yanagi by selecting a depth for the grooves, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

3. Claims 9 and 11 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Yanagi (US Pat. 6,821,869) in view of Kumar (US Pat. 6,696,365) as applied to claims 1 and 3 above, and further in view of Groeche et al. (US Pat. 5,021,121, herein after Groeche).

The combination of Yanagi and Kumar fails to disclose the thickness of a thermally grown silicon oxide layer is $0.2\mu\text{m}$. However, Groeche teaches the thickness of a thermally grown silicon oxide layer is about $1\mu\text{m}$ (col. 4, line 67 through col. 5, line 6). Although the exact thickness of a thermally grown silicon oxide layer was not specified as recited in claim 9, it appears that having a specific thickness of a thermally grown silicon oxide layer as claimed is prima facie obvious due to the fact that one can vary the thickness of a thermally grown silicon

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oxide layer in order to achieve a specific resist patterned. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined process of Yanagi and Kumar in view of Groeche, by selecting a thickness for the resist layer, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In *re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

4. Claims 4, 8, 16 and 19 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Yanagi (US Pat. 6,821,869) in view of Kumar (US Pat. 6,696,365) as applied to claims 1 and 3 above, and further in view of Odagawa et al. (US Pat. 6,778,427, herein after Odagawa).

The combination of Yanagi and Kumar fails to disclose the composition of the alloy is set to satisfy an atomic ratio of Fe: 52 to 72%, Co: 28 to 48%, and Ni: 0 to 3%. However, Odagawa teaches in col. 8, lines 37-43 a soft magnetic film is a NiCoFe alloy ($\text{Ni}_x\text{Co}_y\text{Fe}_z$, with $0.6 \leq x \leq 0.9$, $0.1 \leq y \leq 0.4$, and $0.1 \leq z \leq 0.3$ or $\text{Ni}_{x'}\text{Co}_{y'}\text{Fe}_{z'}$, with $0 \leq x' \leq 0.4$, $0.2 \leq y' \leq 0.95$, and $0.1 \leq z' \leq 0.5$). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined process of Yanagi and Kumar in view of Odagawa, by selecting a suitable composition for the NiCoFe alloy, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In *re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

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Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Vu whose telephone number is (571) 272-1798. The examiner can normally be reached on Monday-Friday from 8:00am to 5:00pm. If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR, Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David Vu

March 26, 2005